

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Overload Safety Claw Coupling

We, MASCHINENFABRIK AUGSBURG-NÜRNBERG A.G., a German company, of 7 Stadt-  
bachstrasse, Augsburg, Germany, do hereby  
declare the invention, for which we pray that  
a patent may be granted to us, and the  
method by which it is to be performed, to be  
particularly described in and by the follow-  
ing statement:—  
The invention relates to an overload  
safety claw coupling or clutch in which, in  
the event of overloading, one of the two  
halves is displaced axially in such a manner  
that the two coupling parts are completely  
separated from each other.  
A large number of safety couplings are  
known which, in the event of overload separate  
the driving part from the driven part to  
prevent considerable damage. In addition to  
those, in which the separated parts in this  
condition rub one upon the other, couplings  
are also known which are completely separated  
from each other and are therefore no  
longer subjected to any wear.  
There are also a number of friction-depen-  
dent or slip-dependent, electrically controlled  
couplings, as well as those in which claws,  
teeth, rollers or balls engage slots. In others  
again, spring-loaded roller levers or locking  
wheels or hydraulic devices are used. Almost  
all these couplings, however, have a posi-  
tively rising force-distance-characteristic, that  
is to say, these couplings begin to operate  
on reaching the load limit, that is to say, an  
angularly true transmission is not possible  
with them.  
In the case of certain drivers, such as, for  
example, in folding apparatus of printing  
machines, such couplings, however, should  
have no play in the peripheral direction, that  
is to say, they should not rotate relatively  
so long as the normal transmission torque is  
present. Furthermore, by means of such a  
coupling, the driven part should be pre-  
vented from continuing to run, in con-

sequence of its rotating masses, when the  
machine is stopped.  
These drawbacks of the known safety coup-  
plings may be avoided according to the in-  
vention by the fact that the slidable part of  
the coupling is supported by a number of  
springs distributed in pairs on the periphery  
in the manner of a toggle joint. As a result  
of this special design of the springs, the  
spring characteristic line is a falling one,  
that is to say, the coupling parts cannot  
move in the peripheral direction as long as  
the overload moment has not been exceeded  
and the coupling disengaged. The construc-  
tions of the two claw rows along the peri-  
phery with axis-parallel faces alternately  
with oblique faces in addition prevents un-  
desired release of the coupling when the  
machine is braked.  
A constructional example of the invention  
is represented in the accompanying drawings,  
wherein:  
Figure 1 shows a longitudinal section,  
Figure 2, a section on the line II—II of  
Figure 3, the upper and lower halves show-  
ing respectively the disengaged and engaged  
conditions of the coupling,  
Figure 3, a section on the line III—III of  
Figure 1,  
Figure 4, the partial development on the  
section IV—IV of Figure 1.  
One claw part 3 is slidable on the driv-  
ing shaft 1 along splines 2. The coupling  
part 4 of the driven side is arranged co-  
axially with aforesaid claw part. The power-  
transmitting surfaces of the two rows of claws  
3, 4 are formed alternatively along the peri-  
phery as sloping faces 5, 6 which relatively  
turn on overload to axially move the clutch  
member 3 through the dead centre position  
of toggle springs (described below) which in  
turn throw the coupling part 3 completely  
clear of the coupling part 4 to disengage  
the coupling, and axis-parallel faces 7, 8.

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- Between these two faces there are provided a nose 9 and on the other half a slot 10, by means of which the coupling can be engaged only in a definite peripheral position. Another depression 11 receives an eccentric 12, rotation of which permits manual operation of the coupling. The face 8 serves at the same time as counter-support for the face 6.
- The coupling part 3 producing the closing force is provided with a plurality of springs 13, 14, distributed in pairs over the periphery after the manner of a toggle joint, and fixed on the one hand to the pin 15, and on the other hand to pins 16, 17, which are mounted in a flange 18 of the coupling part. In Figure 2, in the lower half, the position of the spring pairs is shown in the engaged position, and in the upper half, in the disengaged position. The springs 13, 14 are arranged as stacks of cup springs between sleeves 19, 20, telescopically slidable one within the other. The spring power may be varied by rotation of the sleeves 19. The sleeves 19 are prevented from twisting by clips 21. As will be seen in Figure 2, pins 22 are screws in the sleeves 19, the pins 15, forming the joint for each spring pair, engaging eyes 23 of said pins 22.
- By means of a so-called variable adjustment 24, it is possible, after loosening the screws 25, to adjust the driven shaft relatively to the driving shaft in the peripheral direction, that is to say, for example, to adjust the folding apparatus relatively to the printing mechanisms. By rotating the nuts 26 and 27, the position of the flange 18 can be varied and hence exact adjustment of the coupling in the axial direction can be obtained.
- The claw part 3 is provided with a track 28, which on shifting of the coupling through the axial movement rocks a lever 29, which operates an end switch, not shown, whereby the machine is stopped.
- two halves coupled by spring force in which, in the event of overload, by means of co-operating oblique faces distributed on the periphery of both halves, one of the two coupling halves is displaced axially in such a manner that the two coupling halves are separated completely from each other, wherein the slidable part of the coupling is supported against axial movement by a plurality of springs, distributed in pairs on the periphery thereof after the manner of a toggle joint.
2. Overload safety claw coupling according to claim 1, wherein between the co-operating oblique faces distributed on the periphery of both halves are provided axis-parallel faces which, when the drive is stopped, prevent advancing of the driven part.
3. Overload safety claw coupling according to claims 1 and 2, wherein there are provided on one coupling part rectangularly projecting noses, which engage corresponding slots of the other part.
4. Overload safety claw coupling according to claims 1 and 2, wherein an eccentric is provided between the two coupling halves for the manual actuation of the coupling.
5. Overload safety claw coupling according to claim 1, wherein the slidable coupling part co-operates with an end switch for stopping the drive on overload disengagement.
6. Overload safety claw coupling according to claim 1, wherein the slidable coupling part is adjustably arranged in the axial direction.
7. Overload safety claw coupling according to claim 1, wherein the springs are constructed in the form of stacks of cup springs.
8. Overload safety claw coupling substantially as hereinbefore described with reference to the accompanying drawings.

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#### WHAT WE CLAIM IS:—

1. Overload safety claw coupling having—

Fig.1

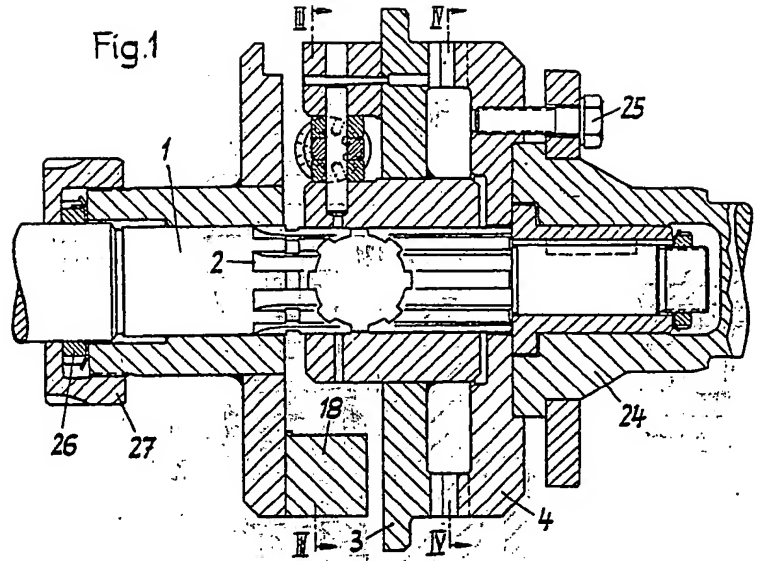
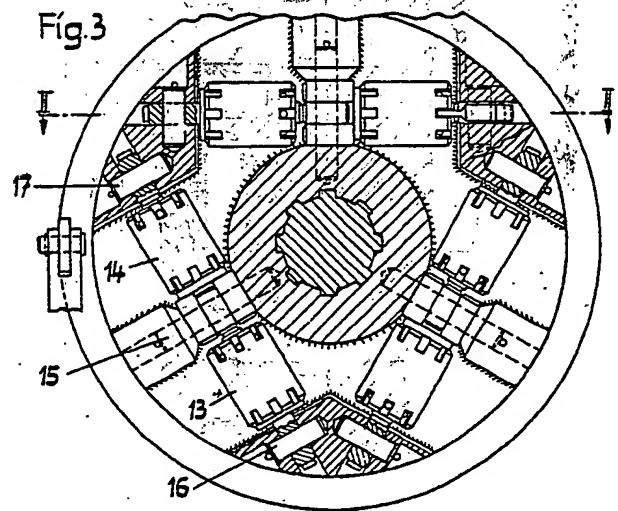


Fig.3



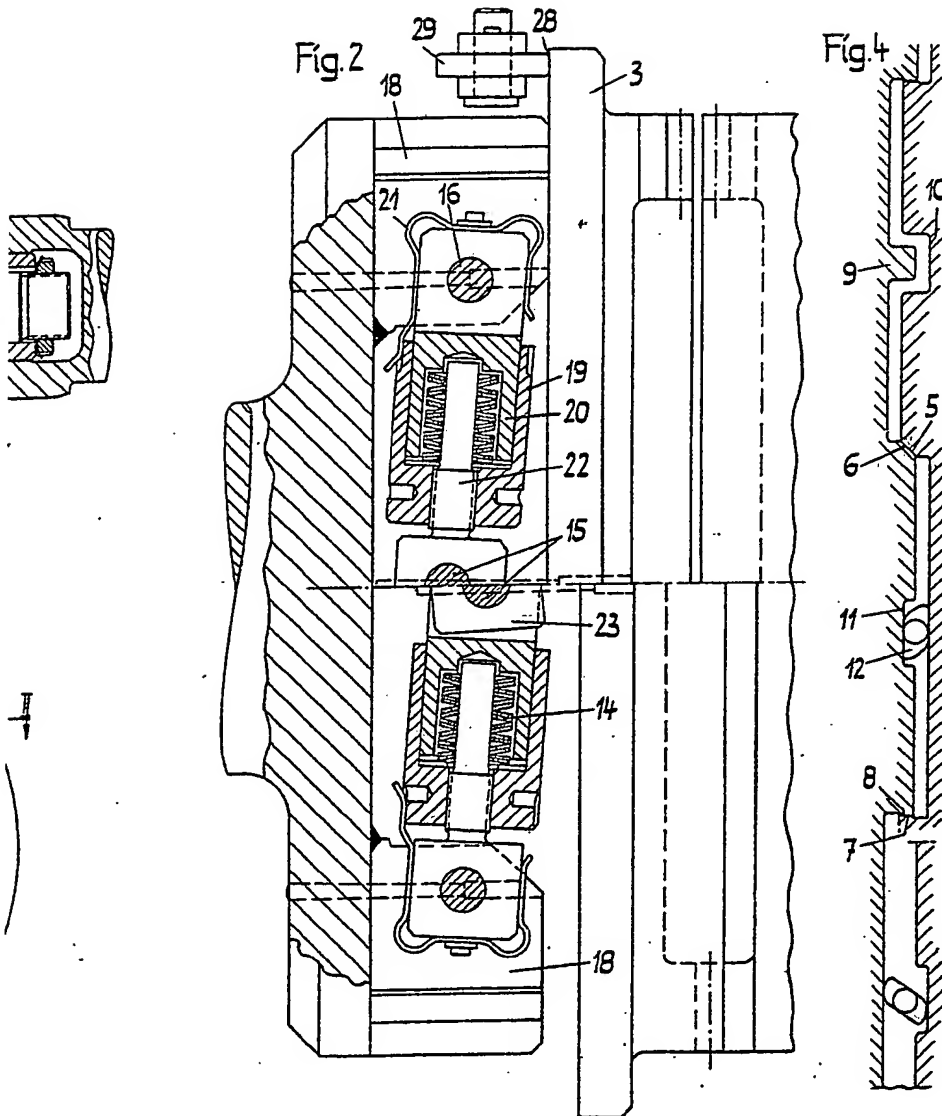
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COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*

Sheets 1 & 2



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